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LETTER AND THE U S NAVY RESPONSE TO THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES AND U S EPA REGION II COMMENTS ON THE DRAFT EXPANDED GROUNDWATER BACKGROUND STUDY REPORT MCB CAMP LEJEUNE NC
3/26/2012
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Response to Comments
Draft Expanded Groundwater Background Study Report
Marine Corps Base Camp Lejeune, North Carolina

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Introduction

The purpose of this document is to address comments on the Draft Expanded Groundwater Background Study Report for Marine Corps Base Camp Lejeune. The North Carolina Department of Environment and Natural Resources (NCDENR) Superfund Section and United States Environmental Protection Agency (USEPA) Region 4 provided the comments listed below. Responses to comments are provided in bold.

NCDENR Comments (dated December 15, 2011)

1. Please include the ProUCL Model Version number and some discussion of its limitations in the Introduction and in Section 5.2.4 on page 5-4 where ProUCL (USEPA, 2009) is first discussed.

   We will include in the final report that ProUCL Version 4 was used and include text regarding the uncertainty that exists for upper tolerance limit (UTL) calculations related to low frequency of detections.

2. I am also concerned about the large number of non-detect values that were a part of this data set. Please discuss the models (algorithms) ability to properly deal with this issue. See the attached letter regarding ProUCL Version 3.0 problems with greater than 15% non-detects.

   For low frequency of detections, ProUCL Version 4 incorporates new state-of-the-art techniques to handle non-detects. When the percent of detections was less than 60 percent, the Kaplan-Meier approach was used for calculating a background UTL.

   ProUCL discusses the possibility of using the maximum background detection or the reporting limit as the UTL when the number of detects is small. For the cases where fewer than 15 percent detected values were available or fewer than 7 detected values were available (or both conditions), the average ratio of the maximum detect over the calculated UTLs provided in the report is approximately 1.3. Because of this, the

Kaplan-Meier approach used with lower frequencies of detects typically calculated a lower background threshold value than if the maximum detected value had been used.

In regard to using the reporting limit as the UTL, reporting limits for many of the constituents with low frequencies of detection are often many-fold higher than the detected results and could result in background threshold values much higher than the UTLs recommended in this report. By using the Kaplan-Meier approach these UTLs aimed to focus the UTL value on the assortment of detected concentrations, which also typically provided more conservative background threshold values than a maximum background detect or reporting limit.

3. Also, we should probably include the box plots in the appendix for future reviewers of the model results.

   The box and whisker plots served to help determine whether the data needs to be partitioned. For the Expanded Groundwater Background Study Report, the only potential data partition was by aquifer. The data was partition by aquifer because of the different characteristics between the two aquifers so box and whisker plots are not needed.

USEPA Comments (dated February 2, 2012)

EPA has completed its review of the Draft Expanded Groundwater Background Study Report, dated December 2011 and has no additional comments. The document can be finalized.